BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 4: e59338
doi: 10.3897/biss.4.59338

OPEN ACCESS

Conference Abstract

‘openDS’ - Progress on the New Standard for Digital Specimens

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Received: 05 Oct 2020 | Published: 06 Oct 2020

Citation: Addink W, Hardisty AR (2020) ‘openDS’ – Progress on the New Standard for Digital Specimens. Biodiversity Information Science and Standards 4: e59338. https://doi.org/10.3897/biss.4.59338

Abstract

In a Biodiversity_Next 2019 symposium, a vision of Digital Specimens based on the concept of a Digital Object Architecture (Kahn and Wilensky 2006) (DOA) was discussed as a new layer between data infrastructure of natural science collections and user applications for processing and interacting with information about specimens and collections. This vision would enable the transformation of institutional curatorial practises into joint community curation of the scientific data by providing seamless global access to specimens and collections spanning multiple collection-holding institutions and sources. A DOA-based implementation (Lannom et al. 2020) also offers wider, more flexible, and ‘FAIR’ (Findable, Accessible, Interoperable, Reusable) access for varied research and policy uses: recognising curatorial work, annotating with latest taxonomic treatments, understanding variations, working with DNA sequences or chemical analyses, supporting regulatory processes for health, food, security, sustainability and environmental change, inventions/products critical to the bio-economy, and educational uses.

To make this vision a reality, a specification is needed that describes what a Digital Specimen is, and how to technically implement it. This specification is named 'openDS' for open Digital Specimen. It needs to describe how machines and humans can act on a Digital Specimen and gain attribution for their work; how the data can be serialized and packaged; and it needs to describe the object model (the scientific content part and its

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structure). The object model should describe how to include the specimen data itself as well as all data derived from the specimen, which is in principle the same as what the Extended Specimen model aims to describe. This part will therefore be developed in close collaboration with people working on that model.

After the Biodiversity_Next symposium, the idea of a standard for Digital Specimens has been further discussed and detailed in a MOBILISE Workshop in Warsaw, 2020, with stakeholders like the GBIF, iDigBio, CETAF and DiSSCo. The workshop examined the technical basis of the new specification, agreed on scope and structure of the new specification and laid groundwork for future activities in the Research Data Alliance (RDA), Biodiversity Information Standards (TDWG), and technical workshops. A working group in the DiSSCo Prepare project has begun on the technical specification of the 'open Digital Specimen' (openDS). This specification will provide the definition of what a Digital Specimen is, its logical structure and content, and the operations permitted on that. The group is also working on a document with frequently asked questions.

Realising the vision of Digital Specimen on a global level requires openDS to become a new TDWG standard and to be aligned with the vision for Extended Specimens. A TDWG Birds-of-a-Feather working session in September 2020 discusses and plans this further. The object model will include concepts from ABCD 3.0 and EFG extension for geo-sciences, and also extend from bco:MaterialSample in the OBO Foundry's Biological Collection Ontology (BCO), which is linked to Darwin Core and from iao:InformationContentEntity in OBO Foundry's Information Artifact Ontology (IAO). openDS will also make use of the RDA/TDWG attribution metadata recommendation and other RDA recommendations. A publication is in preparation that describes the relationship with RDA recommendations in more detail, which will also be presented in the TDWG symposium.

Keywords

TDWG, RDA, DiSSCo, Extended Specimen, Research Data Alliance

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Presented at

TDWG 2020

Funding program

Horizon 2020 - Research and Innovation Framework Programme - Horizon 2020

Grant title

DiSSCo Prepare (Grant agreement number 871043)

Conflicts of interest

None

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